

SUMMARY OF POPULATION MONITORING OF
RIO GRANDE SILVERY MINNOW
(8-12 October 2001)

prepared by:

Robert K. Dudley and Steven P. Platania

Division of Fishes
Museum of Southwestern Biology
University of New Mexico
Albuquerque, NM 87131

submitted to:

U. S. Bureau of Reclamation
505 Marquette NW, Suite 1313
Albuquerque, NM 87102

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Annotated field notes are based on provisional data that is subject to change

The fifth sampling effort of the 2001 Rio Grande silvery minnow population monitoring program was conducted between 8-12 October 2001. A total of 19 sites were sampled. Five sites were located in the Angostura Reach, five sites in the Isleta Reach, and nine sites in the San Acacia Reach. A list of collection localities is appended as Table 1.

Fish were obtained by rapidly drawing a 3.1 m x 1.8 m small mesh (5 mm) seine through discrete mesohabitats. Rio Grande silvery minnow were counted, identified to age-class, and released at the site of capture. Fish from each sampling effort, including a small voucher series of Rio Grande silvery minnow, were preserved in the field in 10% formalin and then returned to the Museum of Southwestern Biology - Division of Fishes for later processing and identification. Specimens were transferred from 10% formalin to water and ultimately to 50% ethyl alcohol prior to being sorted.

Summary of population monitoring efforts by site

The upstream-most area sampled during this collecting effort was near Angostura Diversion Dam [RM 209.7] and was made on 11 October 2001. Substrate consisted primarily of gravel and cobble. Water temperature at this site was cool (13.0°C at 1005 h). Water levels were low and there were low-velocity habitats along the channelized shoreline. Shoreline habitats and backwaters produced the majority of individuals collected. A single isolated pool contained many white sucker (*Catostomus commersoni*). Fish were collected in a variety of habitats but were most frequently present in lower velocity areas. A few flathead chub (*Platygobio gracilis*) were taken at this site. No Rio Grande silvery minnow (*Hybognathus amarus*) were collected in any of the 18 seine hauls made at the Angostura Site.

The second population monitoring site was located near the NM State Highway 44 bridge crossing [RM 203.8] and was sampled on 11 October 2001. Substrate consisted primarily of sand and gravel. The river was highly braided with a multitude of low velocity instream habitats. All but one of the 17 seine hauls produced fish. Fish were beginning to utilize areas with cover, perhaps because of reduced instream water temperatures. A few longnose dace (*Rhinichthys cataractae*) were collected in areas of current over cobble substrate. No Rio Grande silvery minnow were captured at this site.

The next site sampled on 11 October 2001 was just upstream of the Rio Rancho wastewater treatment plant [RM 200.0]. Water temperature at this site was 15°C at 1225 h. A total of 17 seine hauls were taken at this site and fish were collected in all but three hauls. Most of the flow in the river at this locality was being carried in a single channel. There seems to be a transition from sand to gravel/cobble substrate at this and other upstream collecting sites over the past year. Three Age-0 Rio Grande silvery minnow that ranged from 50-57 mm standard length, (SL) were collected.

Sampling at the Central Avenue (US Highway 66) bridge crossing [RM 183.4] was completed on 11 October 2001. Substrate consisted primarily of sand and silt. Some gravel bars were present in the mid-channel areas but were only rarely encountered. There was extensive river braiding and numerous instream mesohabitats. Most fish were collected in pools and found primarily along the shoreline. Only a few individuals were collected in the main channel of the river. The catch was dominated by red shiner (*Cyprinella lutrensis*). Fish were present in most seine hauls (15 of 17) but no Rio Grande silvery minnow were collected.

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The Rio Bravo Boulevard bridge crossing [RM 178.3] was sampled on 12 October 2001. Water temperature was 13°C at 1300 h. A number of different pool/run habitats were present throughout the site. These habitats produced low to moderate numbers of fish. Most fish were collected along the shoreline in deep pools. Many fewer fish were collected at this site than at upstream sites. We collected several gizzard shad (*Dorosoma cepedianum*); an uncommon occurrence in this reach of the river. River carpsucker (*Carpiodes carpio*) and channel catfish (*Ictalurus punctatus*) were relatively common. No Rio Grande silvery minnow were captured at this site.

The most upstream site in the Isleta Reach was the Los Lunas Bridge [RM 161.4] and was sampled on 12 October 2001. The substrata consisted of silt and sand at this and all remaining downstream sites. Aquatic habitats at this site were primarily main and side channel runs and pools. The river was quite braided and habitat heterogeneity was very high. Fish were collected in nearly all habitats but were notably less active than they were in August. There were high numbers of red shiner present at this site. Rio Grande silvery minnow (N=5) were taken in 4 of 18 seine hauls.

Catch at the Belen Site [RM 151.5] on 12 October 2001 was numerically dominated by a few species including red shiner and western mosquitofish (*Gambusia affinis*). Large numbers of fish were collected in low velocity habitats. The river channel was braided. Terrestrial vegetation was present on many of the small sand islands. Instream vegetation consisted of heavy concentrations of algae covering the bottom of pools and backwaters. Age-0 Rio Grande silvery minnow (53-61 mm TL) were present in 4 of 17 seine hauls (N=17).

Aquatic habitat at the Transwestern Pipeline Crossing [RM 143.2] was heterogenous and numerous pools and backwaters were present. This site was sampled on 10 October 2001 and water temperature was 16°C at 1435 h. There was a large amount of silt in lower velocity habitats. No Rio Grande silvery minnow were collected at this site. Fish were collected in all 16 seine hauls.

The U.S. Highway 60 Bridge site [RM 130.6] was also sampled on 10 October 2001. Water temperatures were cool (16°C in the main channel at 1235 h) and flow was low. Only about 30% of the river channel was wetted. The river meandered widely at this locality and presented a wide variety of habitats to sample. Many of the exposed islands supported recent terrestrial vegetative growth. Most habitats contained extremely high numbers of red shiner. A single Rio Grande silvery minnow (60 mm SL) was collected at this site. Commonly collected species included fathead minnow (*Pimephales promelas*), river carpsucker, and western mosquitofish.

The sampling locality 3.5 miles downstream of Bernardo [RM 127.0] was sampled on 10 October 2001 and was composed of complex and diverse habitats. A rainstorm occurred in the area during sampling and caused localized flooding and a notable drop in ambient temperatures. Most of the fish collected were present along the shoreline and in backwaters. Main channel habitats did not produce many fish. Rio Grande silvery minnow were not present in any of the 17 seine hauls made at this site.

The site immediately downstream of San Acacia Diversion Dam [RM 116.2] was sampled on 10 October 2001. There was a modest amount of water flowing over the top of San Acacia Dam and that created several side channels. A wide variety of habitats were available and fish were present in moderate to high densities in all habitats. The catch was numerically dominated by red shiner and river carpsucker. Fish were captured in all 18 seine hauls. Rio Grande silvery minnow (N=19; 49-60 mm SL) were collected in three seine hauls near the base of San Acacia Diversion Dam.

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Habitat at the site 1.5 miles downstream of San Acacia Diversion Dam [RM 114.6] was composed primarily of main channel runs and some side channels. Sampling efforts were conducted at this site on 9 October 2001. The abundance of fish was low to moderate in most habitats. The majority of individuals were collected in debris piles and along the shoreline. A few flathead chub were present in high velocity runs over gravel substrate. A single Rio Grande silvery minnow (61 mm SL) was collected.

Sampling was also conducted on 9 October 2001 at a site just upstream of the Socorro wastewater treatment plant [RM 99.5]. There were a wide variety and quantity of aquatic habitats available at this site. The largest collections of fish were in low velocity runs and in pools. A total of 23 Rio Grande silvery minnow (37-60 mm SL) were collected at this site. Several Rio Grande silvery minnow were infected with a parasitic copepod (*Lernaea sp.*).

The next downstream site (ca. 4 miles upstream of U.S. Highway 380 Bridge [RM 91.7]) was sampled on 9 October 2001. Habitat diversity was high and many low velocity mesohabitats were present throughout the sampling site. Red shiner were collected in nearly all seine hauls and a few flathead chub were present in main channel runs. Fish were collected in 17 out of 18 seine hauls. Rio Grande silvery minnow were present (N=10; 44-54 mm SL) but only in modest densities.

Sampling at the US Highway 380 bridge crossing near San Antonio, NM [RM 87.1] was conducted on 9 October 2001. Most of the flow was confined to a single channel although some small and widely spaced backwaters were present. Fish were collected in all 18 seine hauls. Rio Grande silvery minnow (N=7; 42-52 mm SL) were collected in slow moving water.

On 8 October 2001, we sampled the Rio Grande directly east of the Bosque del Apache National Wildlife Refuge [RM 79.1]. The river was confined to the east shoreline leaving the west bank dry. Much of the area on the east side of the former river channel was heavily vegetated and could become a permanent island. Most instream habitats were shallow and had warmed throughout the day. Rio Grande silvery minnow (N=6; 41-47 mm SL) were present in a wide variety of habitats but were only found in low densities.

At the San Marcial Railroad Bridge Crossing site [RM 68.6] flows were low and there were heavy deposits of silt throughout the site. Some former backwaters were nearly filled with silt. There were a wide variety of habitats present at this site and fish were collected in most seine hauls (16 out of 17). Small red shiner and western mosquitofish were present in nearly all seine hauls. Rio Grande silvery minnow (N=5) were only collected in three seine hauls.

The site at the former confluence of the Low Flow Conveyance Channel and Rio Grande [RM 60.5] contained a variety of habitats. Most fish were present in shallow shoreline habitats. Backwaters produced a variety of nonnative taxa (e.g., common carp [*Cyprinus carpio*], western mosquitofish, and bluegill [*Lepomis macrochirus*]). Rio Grande silvery minnow (N=6; 42-53 mm SL) were present primarily in backwaters and plunge pools.

The downstream most site [RM 57.7] was also sampled on 8 October 2001. Water levels at this site remained fairly low throughout the summer and the river was channelized. All seine hauls contained fish and a wide variety of habitats were present. Red shiner and river carpsucker dominated the catch. Rio Grande silvery minnow (N=8; 40-45 mm SL) were present in pools and backwaters.

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Table 1. Collection localities for 2001 population monitoring of Rio Grande silvery minnow.

Site #	Site Locality
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ANGOSTURA REACH SITES

0	New Mexico, Sandoval County, Rio Grande, below Angostura Diversion Dam, Angostura. River Mile 209.7 SAN FELIPE PUEBLO QUADRANGLE 3916006 N 363811 E
1	New Mexico, Sandoval County, Rio Grande, at NM State Highway 44 bridge crossing, Bernalillo. River Mile 203.8 BERNALILLO QUADRANGLE 3909722 N 358543 E
2	New Mexico, Sandoval County, Rio Grande, ca. 4 miles downstream of NM State Highway 44 bridge crossing at Rio Rancho Wastewater Treatment Plant, Rio Rancho. River Mile 200.0 BERNALILLO QUADRANGLE 3905355 N 354772 E
3	New Mexico, Bernalillo County, Rio Grande, at Central Avenue (US Highway 66) bridge crossing, Albuquerque. River Mile 183.4 ALBUQUERQUE WEST QUADRANGLE 3884094 N 346840 E
4	New Mexico, Bernalillo County, Rio Grande, at Rio Bravo Boulevard bridge crossing, Albuquerque. River Mile 178.3 ALBUQUERQUE WEST QUADRANGLE 3877163 N 347554 E

ISLETA REACH SITES

5	New Mexico, Valencia County, Rio Grande, at Los Lunas (NM State Highway 49) bridge crossing, Los Lunas. River Mile 161.4 LOS LUNAS QUADRANGLE 3852531 N 342898 E
6	New Mexico, Valencia County, Rio Grande, ca. 1.0 miles upstream of NM State Highway 309/6 bridge crossing, Belen. River Mile 151.5 TOME QUADRANGLE 3837061 N 339972 E
7	New Mexico, Valencia County, Rio Grande, ca. 2.2 miles upstream of NM State Highway 346 bridge crossing (near Transwestern Pipeline crossing), Jarales. River Mile 143.2 VEGUITA QUADRANGLE 3827329 N 338136 E

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Table 1 (continued.). Collection localities for 2001 population monitoring of Rio Grande silvery minnow.

Site #	Site Locality
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ISLETA REACH SITES (continued)

8	New Mexico, Socorro County, Rio Grande, at US Highway 60 bridge crossing, Bernardo. River Mile 130.6 ABEYTAS QUADRANGLE 3809726 N 334604 E
9	New Mexico, Socorro County, Rio Grande, ca. 3.5 miles downstream of US Highway 60 bridge crossing, La Joya. River Mile 127.0 ABEYTAS QUADRANGLE 3805229 N 331094 E

SAN ACACIA REACH SITES

10	New Mexico, Socorro County, Rio Grande, directly below San Acacia Diversion Dam, San Acacia. River Mile 116.2 SAN ACACIA QUADRANGLE 3791977 N 326162 E
11	New Mexico, Socorro County, Rio Grande, ca. 1.5 miles downstream of San Acacia Diversion Dam, San Acacia. River Mile 114.6 LEMITAR QUADRANGLE 3790442 N 325263 E
12	New Mexico, Socorro County, Rio Grande, 0.5 miles upstream of the Low Flow Conveyance Channel bridge, east and upstream of Socorro Wastewater Treatment Plant, Socorro. River Mile 99.5 LOMA DE LAS CANAS QUADRANGLE 3771043 N 327097 E
13	New Mexico, Socorro County, Rio Grande, ca. 4.0 miles upstream of US Highway 380 bridge crossing, San Antonio. River Mile 91.7 SAN ANTONIO QUADRANGLE 3761283 N 328140 E
14	New Mexico, Socorro County, Rio Grande, at US Highway 380 bridge crossing, San Antonio. River Mile 87.1 SAN ANTONIO QUADRANGLE 3754471 N 328914 E
15	New Mexico, Socorro County, Rio Grande, directly east of Bosque del Apache National Wildlife Refuge headquarters. River Mile 79.1 SAN ANTONIO, SE QUADRANGLE 3740839 N 327055 E

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Table 1 (continued.). Collection localities for 2001 population monitoring of Rio Grande silvery minnow.

Site #	Site Locality
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SAN ACACIA REACH SITES (continued)

16 New Mexico, Socorro County, Rio Grande, at the San Marcial railroad crossing, San Marcial.
River Mile 68.6 SAN MARCIAL QUADRANGLE
3728347 N 315284 E

17 New Mexico, Socorro County, Rio Grande, at its former confluence with the Low Flow Conveyance Channel and 16 miles downstream of the southern end of the Bosque del Apache National Wildlife Refuge.
River Mile 60.5 PARAJE WELL QUADRANGLE
3718178 N 309487 E

18 New Mexico, Socorro County, Rio Grande, ca. 19 miles downstream of the southern end of the Bosque del Apache National Wildlife Refuge.
River Mile 57.7 PARAJE WELL QUADRANGLE
3714740 N 307380 E
